

State of Utah Comments

on

Draft Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada (DOE/EIS-0250F-S1D)

and

Draft Supplemental Environmental Impact Statement for a Geologic Repository for the Disposal of Spent Nuclear Fuel and High-Level Radioactive Waste at Yucca Mountain, Nye County, Nevada – Nevada Rail Transportation Corridor (DOE/EIS-0250F-S2D)

and

Draft Environmental Impact Statement for a Rail Alignment for the Construction and Operation of a Railroad in Nevada to a Geologic Repository at Yucca Mountain, Nye County, Nevada (DOE/EIS-0369D)

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STATE OF UTAH COMMENTS

The following comments are provided by the State of Utah in response to the notice of comment period on the afore-referenced Draft Supplement Environmental Impact Statement for the Repository (“SEIS”); and the Draft Supplemental Environmental Impact Statements for the Nevada Rail Transportation Corridor and Draft Environmental Impact Statement for the Rail Alignment in Nevada (collectively “SEIS Transp.”) issued by the U.S. Department of Energy (“DOE”) in 72 Fed. Reg. 58,071 (October 12, 2007).¹

A. Comments on the Draft Supplemental Environmental Impact Statement for the Repository

1. At this Late Date, DOE Does Not Have Detailed or Accurate Information on the Overall Concept for the Yucca Mountain Repository

a. Inaccuracies and Lack of Specificity

The Department of Energy’s often-stated goal is in June 2008 to submit a license application to the Nuclear Regulatory Commission (“NRC”) for authorization to construct surface facilities at the Yucca Mountain repository. To achieve that feat, DOE should have already developed detailed plans for the surface design and operations at the repository. Yet, the supplemental environmental impact statement is full of generalities, inaccuracies and, in some instances, a total lack of planning.

Congress amended the Nuclear Waste Policy Act (“NWPA”) in 1987 for the purpose of directing DOE to study the Yucca Mountain site as the sole repository site for the permanent disposal of spent nuclear fuel (“SNF”) and high-level nuclear waste (“HLNW”). After two decades, DOE has either not started² or is only in the early planning stages in areas such as canister design, waste acceptance criteria, transportation route selection and repository throughput.

Eighteen years after Yucca Mountain was chosen as the sole repository candidate site, DOE made a radical change to the design concept for the repository. On October 25, 2005, DOE announced it would no longer accept bare fuel assemblies; instead spent nuclear fuel would be packaged at reactor sites in DOE standardized containers (*i.e.*, transportation, aging and disposal or “TAD” canisters). Yet, the Standard Contract DOE has entered into with nuclear utilities specifies DOE accept bare fuel and not fuel packaged in TAD canisters (or for that matter packaged in dual-purpose canisters). *See* 10 C.F.R. § 961.11. DOE has made no effort to alter the requirements under the Standard Contract even though it is charging ahead with a license application centered on the TAD canister concept.

¹Comments are organized under topic headings for ease of consideration. However, issues are interrelated, and commonly impact or encompass other issues under other topic headings. Issues should not be narrowly construed or evaluated, based on topic headings.

²For example, DOE acknowledges that it has not even started to identify a national suite of rail and truck routes or to develop a transportation operations plan. SEIS at H-10.

Such a discordant approach results in an incomplete design package for the public to review and comment upon. For example, details of DOE's waste acceptance criteria won't be known until DOE submits its license application to the NRC. DOE simplistically assumes SNF and HLNW, at the time of shipment, will meet repository disposal and acceptance criteria. SEIS at 2-42.

Details of DOE's intended use of storage pads at the repository (referred to in the SEIS as "aging pads") won't be known until DOE submits a thermal performance analysis for the repository to the NRC. The final capacity of the storage pads won't be known until post-closure approval by NRC and details of the final TAD canister design won't be known until the TAD canister vendors submit applications to the NRC for certificates of compliance. In response to questions by the Nuclear Waste Technical Review Board, DOE said it is waiting for its "design [to] mature[] with respect to the throughput capability of the facilities, the TAD thermal capabilities as identified by the vendors, emplacement strategies during preclosure . . . and the characteristics of the waste stream" before it decides whether the capacity of the aging pads should be 21,000 MTU (metric tons of uranium) or half that capacity.³

If DOE expects to submit its license application to the NRC in the next six months, these design criteria should be far enough along to allow DOE to write an SEIS that contains specific details rather than mere generalities.

b. Actions Outside the Scope of DOE's Authority

Not only has DOE failed to focus in the SEIS on specific details for a statutorily authorized 70,000 MTU capacity repository, but it has also analyzed unauthorized activities, as illustrated by the following statement in the SEIS:

[G]iven the uncertainties inherent at this time in estimating the amount of spent nuclear fuel and high-level radioactive waste that would result from full or partial implementation of GNEP, this Repository SEIS analyzes the transportation and disposal of about 130,000 MTHM of commercial spent nuclear fuel, 2,500 MTHM of DOE spent nuclear fuel and about 35,780 canisters of high-level radioactive waste (Inventory Module 1).

SEIS at 1-19; *see also* § 8.1.2.1. DOE views such an analysis as "reasonable foreseeable." However, DOE fails to take into account the reality of Congress passing changes to the NWPA to accomplish that desired disposal capacity at Yucca Mountain.

DOE is engaged in litigation in the U.S. Court of Federal Claims with various nuclear utilities who have sued DOE over its failure to meet the NWPA imposed deadline that DOE begin to collect SNF at reactor sites by January 31, 1998. *See* 42 U.S.C. § 10222(a)(5)(B). There is the potential that DOE will expedite commercial SNF shipments to the repository as a litigation strategy

³*See* Letter from Edward F. Sproat, III, Director, Office of Civilian Radioactive Waste Management to B. John Garrick, Ph.D., Chairman, Nuclear Waste Technical Review Board ("NWTRB"), dated November 6, 2007 (hereafter "DOE Letter to NWTRB")(copy attached).

to settle these lawsuits.⁴ Such expedited shipments would appear to violate NWPA's ban on using the repository as an interim storage site. As the NRC recently concluded in its denial of Nevada's petition for rule-making: storage at the repository is permissible only to the extent it is integral to repository operations (*i.e.*, waste handling and disposal). 72 Fed. Reg. 60,288-90 (October 24, 2007).

In sum, DOE should have centered its efforts in the SEIS on informing the public how it has developed a coherent and integrated plan for the authorized geologic disposal of SNF and HLNW and what impacts and other NEPA considerations flow from the proposed action, as authorized by law. This it has failed to do.

2. Fuel Receipt and Acceptance at the Repository and Aging Pads

a. TAD Canisters

DOE expects that 90% of the commercial SNF received for disposal at Yucca Mountain will be in TAD canisters and 10% will be in dual purpose canisters.⁵ *See* SEIS at 2-3 and § 2.1.1. The SEIS, however, fails to discuss how DOE will successfully implement its new TAD approach to managing commercial SNF. For example, what is the basis for DOE's assumption that most commercial SNF will be in TAD canisters? As DOE has yet to choose a standard canister, how can it rely on its 90% TAD receipt assumption? Does DOE expect utilities, who already have SNF stored in dry casks and dual purpose canisters, to repackage it into TAD canisters before DOE will find the fuel acceptable for collection? If so, what is the basis for this assumption? Will DOE provide incentives for utilities to repackage their SNF from dual purpose canisters into TAD canisters?

DOE's updated cask shipment data, Table G-10, lists the number of casks containing uncanistered SNF, TAD canisters and "other canisters." Nowhere is there a specific description of "other canisters." Elsewhere, DOE says: "Shipment of the remaining 10 percent of the commercial spent nuclear fuel would be in rail casks that contained other types of canisters such as dual-purpose canisters or as uncanistered spent nuclear fuel in truck casks." SEIS at S-42. Does this mean that the term "other canisters" in Table G-10 is limited to dual purpose canisters?

In addition, DOE's comments in the SEIS contrast with other DOE statements as to whether DOE will accept commercial SNF in dual purpose canisters. When referring to **dual**

⁴The U.S. Court of Federal Claims recently reviewed a motion to compel production of documents relating to interim storage of SNF and expedited SNF acceptance at the repository. Dairyland Power Cooperative v. United States, No. 04-106 C (filed December 19, 2007) at 11-12 (listing five documents subject to the motion, as described on the Government's privilege log, including memoranda between high-ranking DOE officials and the Executive Branch discussing expedited waste acceptance at Yucca Mountain and interim storage)(copy attached).

⁵DOE's anticipated goal is that 90% of the commercial SNF would be packaged at reactors sites in TAD canisters. DOE also conducted a sensitivity analysis where 75% of commercial SNF would be packaged in TAD canisters. SEIS at 2-9 and A-2 to A-5.

purpose canisters (“DPCs”) in its letter to the NWTRB, DOE qualified its statements with **“should DOE accept them [DPCs]”** (referring to approximately 2500 ‘spots’ on the aging pads for TAD or dual purpose canisters and no direct disposal of dual purpose canisters). DOE Letter to NWTRB at 8, 9. Referring to use of dual purpose canisters at the proposed Private Fuel Storage LLC (PFS) storage facility, Gary Lanthrum, director of the DOE's transportation program, said DOE was only obligated to take bare fuel packaged in welded canisters; that the SNF stored at PFS in dual purpose canisters (specifically, HI-STORM 100, Rev. 0) was not acceptable for disposal at Yucca Mountain; and that the SNF would have to be repackaged, if feasible, at PFS, or sent back to the reactor-owner for repackaging.⁶

The final EIS should openly and adequately address whether DOE will accept fuel in dual purpose canisters; whether it will only accept fuel that is currently loaded into dual purpose canisters and require further loadings to be in TAD canisters; and what cumulative impacts these DOE decisions will have on the future storage and transportation of commercial spent nuclear fuel.

Finally, if DOE's use of TAD canisters will require DOE to amend the Standard Contract (or obtain congressional approval) then DOE should follow the Academy of Science's recommendation and make other changes too (*see* following discussion). SEIS at H-32.

b. Shipment of Aged Fuel

Under the Standard Contract, priority for shipment of fuel to the repository is based on “oldest fuel first.” However, the oldest fuel will not necessarily be fuel that is shipped to the repository because each utility chooses which fuel to ship. SEIS at H-33. The State endorses the Academy of Sciences recommendation to DOE:

DOE should negotiate with commercial spent fuel owners to ship older fuel first to a federal repository or [authorized] federal interim storage, except in cases (if any) where spent fuel storage risks at specific plants dictate the need for more immediate shipments of younger fuel. Should these negotiations prove to be ineffective, Congress should consider legislative remedies. . . .

SEIS at H-32. Under this approach, not only will the public along the transportation route be at less risk of radiological exposure than under the current regime but also DOE would have a better idea of how to handle thermal management at the repository. Moreover, there would be a diminished need to employ “aging” pads – a concept that is on a shaky legal footing.

⁶*See* Goshutes' waste plan hits a snag (Salt Lake Tribune, The (UT), October 15, 2004) http://docs.newsbank.com/openurl?ctx_ver=z39.88-2004&rft_id=info:sid/iw.newsbank.com:AWNB:SLTB&rft_val_format=info:ofi/fmt:kev:mtx:ctx&rft_dat=105D96787772D74E&svc_dat=InfoWeb:aggregated3&req_dat=104CE1A14E0599B8 (copy attached); and Testimony of Robert Halstead, State of Nevada, before the NWTRB, Transportation Planning Panel, at the October 14, 2004 meeting held in Salt Lake City, Utah, Tr. at 433-37 (copy attached).

c. Need for Aging Pads

DOE says it needs to use aging pads as part of its thermal management strategy because there are few constraints on the thermal limits of commercial SNF that DOE must accept from utilities. The fuel must have been out of the reactor for at least 5 years and meet the thermal limits imposed on an NRC certified shipping cask and TAD, dual purpose or other canister. *See* DOE Letter to NWTRB at 4. These thermal constraints on fuel shipments would hold whether fuel is packaged in TAD canisters, dual purpose canisters or bare fuel casks. In all cases, there is uncertainty as to the upper thermal basis and specific thermal power of fuel DOE would receive from utilities. *Id.*

The SEIS should discuss the reasonably foreseeable possibility of changing the requirement that DOE accept any fuel that a utility chooses to ship. If DOE were to accept less radioactive and thermally cooler fuel, its thermal management strategies would be predictable and simplified and the need for aging pads would be virtually eliminated.

Even if DOE proceeds with its action as planned, there is no discussion on the need for aging pads with a total storage capacity of 21,000 MTU (space for 2,500 casks). DOE's targeted fuel receipt at Yucca Mountain, after ramping up for the first four years, will be 3,000 MTU per year for about 26 years.⁷ It is difficult to imagine with this throughput, that DOE will need the capacity to store one third of the repository's legally authorized commercial SNF disposal capacity on aging pads. DOE should provide a more reasoned discussion on the need for and authority to employ aging pads at the geologic repository operations area.

3. DOE Has Not Conducted an Adequate Accident Analysis of the Casks and Canisters

a. Need for Full Scale Testing

To validate DOE's assessment of transportation impacts, the transportation casks, the TAD canister, and any dual-purpose casks should undergo full-scale testing prior to the initiation of DOE's shipping campaign. On February 22, 2007 the Nuclear Regulatory Commission authorized a high-speed crash test of a rail shipping cask under the Package Performance Study.⁸ To validate the credibility of the study, NRC or DOE should take the following actions:

- Perform Full scale testing of each type of shipping cask and canister (TAD and dual-purpose).
- Test the casks to failure.
- Develop test protocols that bound accident, sabotage and terrorist attack scenarios.

⁷*See e.g.*, DOE Target Fuel Acceptance Rate of commercial SNF (Analysis of the Total System Life Cycle Cost of the Civilian Radioactive Waste Management Program, May 2001, DOE/RW-0533). For the first four years, fuel receipt will ramp up each year from 400 MTU, to 600 MTU, to 1,200 MTU, to 2,000 MTU and, finally, in year 5 and beyond, to 3,000 MTU. *Id.*

⁸*See* <http://www.nrc.gov/reading-rm/doc-collections/news/2004/04-056.html>.

- Conduct random full scale tests throughout the Yucca Mountain shipping campaign.
- Use mock fuel rods to evaluate the impact on spent nuclear fuel rods that are deteriorating or have been in use for specified periods of time.

b. No Dynamic Accident Analysis

DOE should conduct a dynamic accident analysis. A comprehensive assessment of the environmental impacts of the TAD canisters, the shipping casks, and the aging casks cannot be made without actual stress/stain failure data for high load, instantaneous, three dimensional dynamic impacts. Without such data there are too many uncertainties in the applicable static test data for that data to be reliable. Uncertainties arise from the residual stresses, high strain rates, large strain gradients in the failure area and from the cask welding and fabrication process.

c. Aircraft Crash into Storage Casks Should Not Be Excluded from the Analysis

DOE assumes the specifications for the storage (aging) overpacks would allow them to withstand the crash of an F-15 fighter aircraft with an impact speed of 150 meters per second. SEIS at E-11, E-12 and E-30. The State begs to differ. Using DOE-STD 3014-96, the State of Utah has modeled and analyzed the impact of an F-16 fighter jet into a Holtec HI-STORM 100, Rev. 0, overpack, stored on a 3 foot thick concrete pad.

The State's analysis is relevant to an aircraft crash into overpacks stored on the proposed aging pads at the repository. Unfortunately, the State is prohibited from releasing the report because it submitted the analysis to the NRC in the Private Fuel Storage LLC ISFSI licensing proceeding, Docket No. 72-22, and NRC classified it as safeguards information. Utah urges DOE to obtain a copy of Utah's modeling and analysis from the NRC. After reviewing Utah's analysis, DOE should find that it cannot exclude the overpacks from the aircraft crash frequency evaluation.

4. The Transportation Routes Shown in the SEIS Are Unrealistic

DOE's proposed action now consists of a "mostly rail" option. Spent nuclear fuel and high-level radioactive waste would be transported across the nation from 76 sites to the repository, primarily by train, on routes represented on Figure 2-11. SEIS at 2-42. In addition, DOE has analyzed the radiological impacts of transporting SNF and HLNW to the repository based on "representative unconstrained" transportation routes. *See* SEIS Chapter 6 (*in general*) and Figs. 6-1 (Caliente rail corridor) and 6-2 (Mina rail corridor).

The way in which DOE has presented routing information is misleading to the public along the transportation corridor routes and, in particular, to government officials and emergency responders because it is not a realistic scenario of actual shipping routes. The route through Utah, for example, shows rail shipments entering Utah from Colorado on a rail line parallel to I-70, then branching north-west through Spanish Fork Canyon to Salt Lake City or heading south before reaching Salt Lake City. *See e.g.*, Figs. 2-11, 6-1, 6-2, G-41 and S-9. A person would need to look in Appendix A to find a representative "constrained" shipping route. Figures A-1 and A-2 shows that all shipments would enter northern Utah from Wyoming, then travel through Ogden and downtown Salt Lake City. Buried in Appendix A is DOE's acknowledgment that there is a "constraint on

routing of spent nuclear fuel and high-level radioactive waste through long tunnels, such as the Moffat Tunnel west of Denver” SEIS at A-5.

The central discussion of rail transportation impacts in the final EIS should present realistic and actual unconstrained shipping routes. In Utah, the mostly rail options means that all SNF and HLNW shipments will travel through the populous Wasatch front and almost all shipments will travel through the heart of downtown Salt Lake City.

5. DOE’s Transportation Analysis is Incomplete

a. Exclusion of Shipments from 45 Separate Locations

The SEIS discusses the impacts of spent nuclear fuel and high-level waste shipments from 72 commercial sites and four DOE sites. SEIS at 6-11. But the SEIS acknowledges that spent fuel is currently stored at 121 sites. SEIS at 1-1, fn 1. Apparently, waste at some 45 sites will first be shipped to one of the four DOE sites, where the waste will then be shipped to Yucca Mountain. Id. If the waste is sent to either the Idaho Engineering Laboratory or to the DOE Hanford, Washington site, then a high proportion of all shipments will travel through Utah twice: once on the way to the DOE Idaho and Washington sites and a second time when the waste is shipped from those sites to Yucca Mountain.

Shipments of waste to DOE sites are incidental to the disposal of SNF and HLNW at Yucca Mountain. Therefore, the final EIS analysis should include shipping routes and modes of shipments, as well as a break down of the risks and consequences of waste shipments from 45 separate locations to each of the four DOE sites.

b. Exclusion of Low-Level and Hazardous Waste Shipments

The waste generated from operations at the Yucca Mountain, Nevada, repository is a connected action to the geologic disposal of SNF and HLNW. As such, it should be (but is not) part of DOE’s NEPA analysis for the repository.

DOE estimates repository operations will generate 74,000 cubic meters of low-level radioactive waste, including liquid waste. SEIS at 4-88. According to DOE, the low-level waste will be disposed in a “DOE low-level waste disposal site, a site in an Agreement State, or in an NRC-licensed site.” SEIS at 2-31. Notably, the State of Nevada is a member of the Rocky Mountain Compact and sends its low-level radioactive waste to the Northwest Compact site at Hanford, Washington.

Nowhere in the SEIS does DOE address whether the Compact places constraints on DOE’s low-level waste disposal options. DOE should address this issue in the final EIS, as well as evaluate the risks and potential impacts from transporting low-level waste to an appropriate disposal facility. Also, approximately 8,900 cubic meters of hazardous waste will be generated at the repository. SEIS at 4-88. In the final EIS, DOE should similarly account for the risks from transporting hazardous waste to disposal facilities.

6. Emergency Planning

DOE expects states, Indian tribes and local governments to have primary responsibility in responding to accidents, sabotage or other incidents involving DOE spent nuclear fuel or high-level nuclear waste shipments. SEIS at H-16. Section 180(c) of NWRPA requires DOE to provide technical assistance and funding for emergency response training. However, shipments to Yucca Mountain will impose a much larger financial and resource burden than emergency response training. States, Indian tribes and local governments must equip their responders and health care facilities. Furthermore, states, Indian tribes and local governments will incur costs to monitor, inspect, and escort waste shipments to minimize impacts to the public and the environment and to ensure that appropriate personnel are prepared to act.

The thousands of shipments to Yucca Mountain will also degrade local infrastructure that is vital to communities. The infrastructure must be maintained, repaired, or replaced. DOE optimistically says states, Indian tribes and local governments are "persons" under the Price-Anderson Act and "**could** be entitled to indemnification for legal liability, which would include all reasonable additional costs of responding to a nuclear incident or authorized precautionary evacuation." SEIS at H-21 (*emphasis added*). States, Indian tribes, and local governments should not be forced to seek judicial relief for reimbursement under the Price-Anderson Act for costs from an incident caused by DOE or its contractors. DOE must be responsible for all reasonable costs incidental to shipments of spent fuel or high-level waste to Yucca Mountain. Moreover, DOE must also be responsible for the costs related to a shipping incident or other impacts from operations at the Yucca Mountain repository.

7. High Explosives and Safety

DOE will be conducting subsurface excavation activities for the underground repository while it is operating the surface facilities at the geologic operation area (GROA). DOE will use high explosives, stored on-site, for tunnel blasting and road construction. SEIS at 2-22, 2-40, 4-17 and 4-115. Consequently, GROA operations may include storage, handling and repackaging of SNF and HLNW in proximity to the use and storage of high explosives.

The SEIS should contain an analysis of the risks of storing and handling explosives when spent nuclear fuel and high-level radioactive waste are onsite. It should also address whether the use of underground explosives impact the active faults in the area.

8. Socioeconomic Issues

The SEIS does not adequately address the socioeconomic impacts on the region from constructing and operating the Yucca Mountain repository.

a. Employment Impacts

Currently, the Rocky Mountain region is the fastest growing region in the nation, experiencing a growth rate in 2005 of 5.2 percent. *2007 Economic Report to the Governor*, State of Utah

at 77. In 2006, Utah experienced a 5.2 percent job growth, with 18.1 percent growth in the construction sector. *Id.* at 55. The Utah unemployment rate averaged 3.3. percent in 2006. *Utah Economic Report* at 57. The State of Utah is already concerned that its 3.3 percent unemployment rate will be incapable of supplying Utah's economy with an adequate labor force (*id.*) and questions whether the Yucca Mountain project will substantially impact Utah's labor force.

DOE plans to initiate construction of the Yucca Mountain repository in 2012. In 2014, DOE estimates it would employ 2,590 workers, peaking at 2,690 employees in 2019. SEIS at 4-42 to 43. In planning for a construction worker housing camp (*see* SEIS at 2-39), DOE expects that many of the construction employees will come from outside Nye and Clark counties, Nevada. DOE has not adequately analyzed the effect on the regional labor pool from the workforce needed for the Yucca Mountain Project. The final EIS must evaluate the regional impacts on economic development and growth from the construction and operation of the Yucca Mountain repository.

b. Energy Demands

"[E]nergy is a critical component in sustaining Utah's vibrant economic growth and preserving our unparalleled quality of life," said Utah Governor, Jon M. Huntsman, Jr.⁹ The construction and operation of the repository could use up to 790,000 megawatts hours of electricity annually. SEIS at 4-84. Yet, the SEIS fails to discuss impacts on regional areas or neighboring states from energy use at the Yucca Mountain geologic repository.

Nevada Power and Valley Electric, which both supply power to the Nevada Test Site, will provide electrical power to Yucca Mountain. In 2005, Nevada Power purchased 61 percent of its power; Valley Electric also purchased power. SEIS at 3-81, 82. The Nevada Public Utilities Commission projects that if Nevada Power does not secure additional generation facilities, it could have a power shortfall of 4,000 megawatts by 2020. *Nevada's Electricity Future: A Portfolio-Focused Approach* (2007) at 3. Nevertheless, DOE assumes that Nevada Power and Valley Electric will continue to meet the electrical demands of its customers, including DOE. In addition, the SEIS for the rail corridor notes that the Lincoln County Power District No. 1, which supplies power to Lincoln County residents, "plans to increase long-term supply by buying into the planned coal-fired Intermountain Power Project [IPP] plant in Delta, Utah." SEIS Transp. at 3-313. If DOE plans to purchase power from Lincoln County Power, it should understand that IPP has abandoned its plans to build a third coal-fired power plant unit.

DOE does not explain its basis for assuming customer electrical demands will be met. This raises a number of unanswered questions. For example, do the *Integrated Resource Plans* for Nevada Power and Valley Electric account for the projected power usage at Yucca Mountain?¹⁰ Will these utilities continue to purchase electrical power to meet customer demand? How will the availability of electrical power impact economic development projects in Utah and other neighboring states?

⁹ *See* <http://energy.utah.gov/energy/>.

¹⁰ *Cf* Pacific Corp. estimate that it will require an additional 2,113 megawatts by 2014. *Form 10 K, MidAmerica Energy Holding Company*, filed March 1, 2007, at 10.

What affect will the additional electrical demands for the Yucca Mountain repository have on the regional inventory of greenhouse gas emissions?

During construction of Yucca Mountain, DOE estimates annual use of diesel fuel and gasoline at 1.5 million gallons and 47,000 gallons, respectively. SEIS 4-84. The SEIS does not address the volume of carbon emissions from the use of fossil fuel and the potential impacts on Nevada and neighboring states in their attempt to reduce regional greenhouse gas emissions in the next decade and beyond. Nor does it address the impact DOE's fuel usage will have on regional fuel stockpiles or fuel prices.

c. Water Availability and Water Supply

DOE requires 430 acre-feet of water annually, primarily for its repository construction activities, but the Nevada State Engineer has denied DOE's water rights application for this appropriation. SEIS at 11-7. DOE acknowledges that its peak water requirements would draw down the aquifer during the first two years of construction. SEIS at S-24, S-26. Moreover, groundwater in the downgradient Amargosa Desert area is over appropriated but DOE concludes, because actual recent withdrawals have averaged half the total appropriations, the Yucca Mountain project there will create little, if any, environmental impacts. *Id.* at S-26.

DOE has chosen the Yucca Mountain site, in part, because it is in an arid environment. SEIS at S-7. But a desert environment also has negative consequences, such as an inadequate and unpredictable supply of water. DOE has not discussed any alternative plans to obtain water for construction and operation of the surface facilities and underground repository should the supply of groundwater prove inadequate or unavailable. The final EIS should address this issue.

The SEIS refers to the Southern Nevada Water Authority as the wholesale provider for southern Nevada's regional water needs. SEIS at 3-80. There is passing reference that Southern Nevada Authority is developing other sources of water from the Colorado River and elsewhere in Nevada. *Id.* However, DOE fails to discuss Southern Nevada Authority's controversial plan to acquire groundwater from an interstate aquifer, underlying Snake Valley in western Utah and eastern Nevada, and pipe it to southern Nevada.¹¹ While DOE says that groundwater is the only source of available water for the repository (*id.*), there is a finite amount of water to satisfy Nevada's ever-growing needs. Any water used for the repository must come out of this finite pool. Therefore, the SEIS should discuss southern Nevada's acquisition of water from the Snake Valley aquifer.

d. Use and Consumption of Raw Materials and Supplies

DOE estimates construction of the Yucca Mountain repository would require 320,000 cubic meters of concrete and 130,000 metric tons of cement. SEIS at 4-85. DOE claims the concrete demand is less than one percent of that used in Nevada. DOE also says: "Cement would be purchased through regional markets and shipped to the site." SEIS at 4-85. Again, DOE presumes that the regional cement suppliers would have the ability to meet demand.

¹¹ See <http://www.waterrights.utah.gov/meetinfo/m031505/default.htm>

DOE also foresees no difficulty in procuring adequate supplies of stainless steel, nickel based alloy, carbon steel, and titanium¹² to manufacture over:

- 11,200 waste packages (outer shell of nickel based alloy and inner shell of stainless steel);
- 7,400 TAD stainless steel canisters;
- 11,200 nickel based alloy and stainless steel emplacement pallets;
- 11,500 titanium drip shields;
- 2,500 aging overpacks (carbon steel and concrete);
- 10 shielded stainless steel transfer casks; and
- 109 stainless or carbon steel shipping casks (79 rail and 30 truck).

See SEIS at 4-95 to 104. DOE fails to meet the requirement of NEPA because it does not discuss the regional or national economic impacts from the material and supplies needed and consumed at the Yucca Mountain repository.

B. Comments on the Draft Supplement Environmental Impact Statement for the Nevada Rail Transportation Corridor and the Draft Environmental Impact Statement for the Nevada Rail Alignment (Caliente and Mina Routes).

The draft supplemental environmental impact statement for the transportation corridor describes air quality; employment; and occupational, public health and safety *regions of influence* for the Caliente rail alignment to include only Lincoln, Nye, and Esmerelda Counties in Nevada. SEIS Transp. at 3-3 to 4. The Dixie National Forest and two Utah counties (Iron and Washington) abut Lincoln County, Nevada, and the town of Modena, Utah, is less than 35 miles east of Caliente. Given that air contaminants will not stop at the Nevada-Utah state line, DOE must also address air quality impacts in Utah.

The transportation SEIS should also assess any employment and economic development impacts on Washington and Iron Counties in Utah. Furthermore, DOE should evaluate public health, safety, and infrastructure impacts along Utah highways and in Utah communities where workers or goods and materials related to rail construction may travel.¹³ In particular, DOE must, at least, assess the impacts on Utah State Road-56 to Modena and the surrounding communities.

DOE plans to withdraw water for rail construction from aquifers below the location of the rail line. SEIS Transp. at 3-3. The Death Valley region, including Yucca Mountain, is in the Basin and Range physiographic province. Moreover, distinct hydrogeologic boundaries for the aquifer at

¹²DOE makes the offhand assumption that, when the time comes, there will be a sufficient supply of titanium needed for a vital component of the repository, the drip shields. DOE makes this assumption even though the quantity of titanium it needs would currently amount to 22 percent of the nation's annual titanium import or production. See SEIS at 4-104 to 105 and Table 4-36.

¹³ E.g., The nearest active ballast quarry is located in Milford, Utah. SEIS Transp. at 3-314.

Yucca Mountain cannot be identified and the boundaries are up to 500 kilometers away.¹⁴ Several Utah aquifers, also in the Basin and Range province, are less than 500 kilometers from Yucca Mountain. Accordingly, DOE must assess the impact to regional aquifers and how DOE's draw down of groundwater may impact aquifers in Utah.

Thank you for the opportunity to comment. If you have any questions, please contact:

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¹⁴See e.g., *Regional Groundwater Modeling of the Yucca Mountain Site Using Analytic Elements*, M. Bakker, E.I. Anderson, T.N. Olsthoorn, and O.D.L. Strack, *Journal of Hydrology*, Volume 226, Issues 3-4, December 31, 1999.